AUTHOR INDEX

Adams, V. W., 181
Anahara, R., 109
Appleby, A. J., 3, 267, 333, 367
Asada, T., 97

Baldwin, R. S., 399, 591
Bankston, C. P., 301
Baron, F., 207
Blomen, L. J. M. J., 71
Brewer, J. C., 341
Brill, J., 533

Cataldo, R. L., 291
Chang, R., 555
Coates, D., 521
Cornilsen, B. C., 453

Daugherty, P., 521
Deligiannis, F., 579
Dhar, H. P., 333
Di Stefano, S., 301
Dodson, G., 533
Dufour, A., 143

Eisman, G. A., 389
Enayetullah, M. A., 367

Feret, J. M., 59
Fielder, W. L., 443
Forchione, J., 355

Gemeiner, R. P., 341
Giner, J., 437
Griffith, A., 355

Halpert, G., 579
Hashimoto, N., 87
Huang, C.-K., 579

Itoh, N., 29

Joon, K., 77

Kackley, N., 423
Kim, Y. J., 333
Klein, J. W., 287
Koch, H., 367
Kuchynka, D. J., 321
Kumm, W. H., 169

LaConti, A. B., 355
Lemons, R. A., 251
Lenhart, S. J., 477
Leonida, A., 399
Lessner, P., 355, 437
Lim, H. S., 503
Lovering, D. G., ix
Loyselle, P. L., 453

Macdonald, D. D., 477
Manko, D. J., 367
Manoukian, M., 437
Manzo, M. A., 341, 541
McElroy, J., 399
McPheeters, C. C., 311
Miller, L., 533
Minck, R., 555
Mugerwa, M. N., 71
Murphy, O. J., 333
Myles, K. M., 311

Nalette, T., 399
Nelson, P. A., 565

O'Donnell, P. M., xv

Paul, G., 521
Pham, M., 399
Pound, B. G., 477

Prakash, J., 413
Prater, K., 239
Prokopius, P. R., 193

Rastler, D. M., 47
Ratnakumar, B. V., 301
Reid, M. A., 467
Riley, B., 223

Samells, A. F., 321
Sarangapani, S., 355, 437
Serfass, J. A., 119
Shan, X., 453
Shen, D. H., 579
Singer, J., 443
Srinivasan, S., 367
Strasser, K., 149
Subbarao, S., 579
Swette, L., 423

Trimble, K., 37
Tryk, D., 413
Tsai, K. J., 321

Usami, Y., 97

van den Broek, H., 201
van Dijkum, P., 77
Vellone, R., 143
Verzwyvelt, S. A., 503

Walsh, M. P., 13
Warshay, M., 193
Woods, R., 37

Yeager, E., 413
Yi, T. Y., 283

Zegers, P., 133

© Elsevier Sequoia/Printed in The Netherlands

SUBJECT INDEX

Alkaline fuel cell(s)
cathode, corrosion testing of candidates for, 443
design of, 149
at Elenco, 201
non-noble electrocatalysts for, 437
oxygen electrodes for rechargeable, 423

Battery(ies)
advanced high-temperature, 565
MnO_2–hydrogen, rechargeable; new concept for high-cycle-life LEO, 333
Na, advanced rechargeable, with novel cathodes, 301
Na–S, flight experiment definition study, 555
Ni–hydrogen, characterization testing of 40 ampere hour bipolar, 341
in unmanned missions, importance of, 287
Battery cell
Ni–hydrogen, multi-mission, for 1990s, 533
Battery usage
in NASA/GSFC LEO and GEO spacecrafts, overview of, 283

Cadmium
Ni/Cd and Ni/H_2 cells, impedance studies of, using cell case as reference electrode, 467
Capacitors
advanced double layer, 355
Capacity loss
Ni–hydrogen, on storage, 541
Cathode(s)
advanced rechargeable Na batteries with novel, 301
alkaline fuel cell, corrosion testing of candidates for, 443
Cells
Li, advances in ambient temperature secondary, 579
Ni/Cd and Ni/H_2, impedance studies of, using cell case as reference electrode, 467
Characterization testing
of 40 ampere hour bipolar Ni–hydrogen battery, 341
Commercialisation
of on-site fuel cell in Japan, development and, 87
Corrosion testing
of candidates for alkaline fuel cell cathode, 443
Cycle life
of Ni–hydrogen cells, KOH concentration effect on; results of failure analyses, 503

Degradation
of $Ni(OH)_2/NiOOH$ electrodes, application of electrochemical impedance spectroscopy for characterizing, 477
Design
of alkaline fuel cells, 149
Dow Chemical
perfluorinated membranes in proton-exchange membrane in fuel cells, application of, 389

Electric Power Research Institute
role in developing fuel cell systems, 47
Electrocatalysts
non-noble, for alkaline fuel cells, 437
for oxygen electrodes in fuel cells and water electrolyzers for space applications, 413
Electrochemical generation
of useful chemical species from lunar materials, 321
Electrochemical impedance spectroscopy
application of, for characterizing degradation of $Ni(OH)_2/NiOOH$ electrodes, 477
Electrode(s)
cell case as reference, impedance studies of Ni/Cd and Ni/H_2 cells using, 467
low Pt loading, recent advances in solid polymer electrolyte fuel cell technology with, 367

© Elsevier Sequoia/Printed in The Netherlands

Ni
advances in lightweight, technology, 521
structural comparison of, and precursor phases, 453
$Ni(OH)_2$/NiOOH, application of electrochemical impedance spectroscopy for characterizing degradation of, 477
oxygen
electrocatalysts for, in fuel cells and water electrolyzers for space applications, 413
for rechargeable alkaline fuel cells, 423
Electrolyte
solid polymer, fuel cell technology, recent advances in, with low Pt loading electrodes, 367
Electrolyzers
hydrogen–oxygen proton-exchange membrane fuel cells and, 399
water, for space applications, electrocatalysts for oxygen electrodes in fuel cells and, 413
Elenco
alkaline fuel cells at, 201
Europe
fuel cells in, 133
European Space Agency
fuel cell, 207

Flight experiment definition study
Na–S battery, 555
Fuel cell(s)
alkaline
cathode, corrosion testing of candidates for, 443
design of, 149
at Elenco, 201
non-noble electrocatalysts for, 437
oxygen electrodes for rechargeable, 423
applications and market opportunities, 37
electrocatalysts for oxygen electrodes in, and water electrolyzers for space applications, 413
in Europe, 133
European Space Agency, 207
and future; Sir William Grove to today, 3
hydrogen–oxygen proton-exchange membrane, and electrolyzers, 399
importance of, to address global warming problem, 13
in Italy, 143
power production, Tokyo Electric Power Company approach, 97
for propulsion, marine and naval applications of; process selection, 169
proton-exchange membrane, application of Dow Chemical's perfluorinated membranes in, 389
solid oxide
monolithic, development, 311
next stage, 223
solid polymer electrolyte, technology, recent advances in, with low Pt loading electrodes, 367
solid polymer, renaissance of, 239
in space; yesterday, today and tomorrow, 193
for transportation, 251
Fuel cell applications
for ships and submarines, possible, 181
Fuel cell developments
in Japan, 29
Fuel cell systems
Electric Power Research Institute's role in developing, 47
Fuji Electric
PAFC activities, 109

GEO (geosynchronous earth orbiting)
spacecraft, overview of battery usage in NASA/GSFC, 283
Global warming problem
importance of fuel cells to address, 13
Grove
Sir William, to today; fuel cells and future, 3

Human exploration mission studies, 291
Hydrogen
MnO_2–, rechargeable, batteries; new concept for high-cycle-life LEO, 333
Ni–
battery, characterization testing of 40 ampere hour bipolar, 341
battery cell for 1990s, multimission, 533
capacity loss on storage, 541
cells, impedance studies of, and Ni/Cd, using cell case as reference electrode, 467

cells, KOH concentration effect on cycle life of; results of failure analyses, 503
–oxygen proton-exchange membrane fuel cells and electrolyzers, 399

Impedance studies
of Ni/Cd and Ni/H_2 cells using cell case as reference electrode, 467
Italy
fuel cells in, 143

Japan
fuel cell developments in, 29
on-site fuel cell, development and commercialization, 87

LEO (low earth orbiting)
new concept for high-cycle-life; rechargeable MnO_2–hydrogen batteries, 333
spacecraft, overview of battery usage in NASA/GSFC, 283
Lithium cells
advances in ambient temperature secondary, 579
Lunar materials
electrochemical generation of useful chemical species from, 321

Manganese dioxide
rechargeable MnO_2–hydrogen batteries; new concept for high-cycle-life LEO, 333
Marine and naval applications
of fuel cells for propulsion; process selection, 169
Market introduction
of PAFC systems, technology development and, 71
Market opportunities
fuel cell applications and, 37
Mission(s)
Ni–hydrogen battery cell for 1990s, multi-, 533
unmanned, importance of batteries in, 287
Mission studies
human exploration, 291
Molten carbonate fuel cell
programme in the Netherlands, 77

NASA/GSFC
LEO and GEO spacecrafts, overview of battery usage in, 283
Netherlands
molten carbonate fuel cell programme in, 77
Nickel
/Cd and Ni/H_2 cells, impedance studies of, using cell case as reference electrode, 467
–hydrogen battery cell for 1990s, multi-mission, 533
–hydrogen battery, characterization testing of 40 ampere hour bipolar, 341
–hydrogen capacity loss on storage, 541
–hydrogen cells, KOH concentration effect on cycle life of; results of failure analyses, 503
Nickel electrode(s)
application of electrochemical impedance spectroscopy for characterizing degradation of $Ni(OH)_2$/NiOOH electrodes, 477
structural comparison of, and precursor phases, 453
technology, advances in lightweight, 521

Oxygen
hydrogen–, proton-exchange membrane fuel cells and electrolyzers, 399
Oxygen electrodes
electrocatalysts for, in fuel cells and water electrolyzers for space applications, 413
for rechargeable alkaline fuel cells, 423

Perfluorinated membranes
application of Dow Chemical's, in proton-exchange membrane fuel cells, 389
Phosphoric acid fuel cell (PAFC)
Fuji Electric, activities, 109
technology development and market introduction of PAFC systems, 71
Westinghouse air-cooled PAFC technology, 59
Platinum
low Pt loading electrodes, recent advances in solid polymer electrolyte fuel cell technology with, 367
Potassium hydroxide
concentration effect on cycle life of Ni–hydrogen cells; results of failure analyses, 503

Power production
future of fuel cells for, 119
Tokyo Electric Power Company approach to fuel cell, 97
Precursor phases
structural comparison of Ni electrodes and, 453
Process selection
marine and naval applications of fuel cells for propulsion, 169
Proton-exchange membrane fuel cells
application of Dow Chemical's perfluorinated membranes in, 389
hydrogen–oxygen, and electrolyzers, 399

Ships
possible fuel cell applications for, and submarines, 181
Sodium
advanced rechargeable Na batteries with novel cathodes, 301
–S battery flight experiment definition study, 555
Solid oxide fuel cell(s)
development, monolithic, 311
next stage, 223
Solid polymer electrolyte fuel cell
technology, recent advances in, with low Pt loading electrodes, 367
Solid polymer fuel cell
renaissance of, 239
Space
European Space Agency fuel cell, 207
fuel cell in; yesterday, today and tomorrow, 193
Space applications
electrocatalysts for oxygen electrodes in fuel cells and water electrolyzers for, 413
Spacecrafts
battery usage in NASA/GSFC LEO and GEO, overview of, 283
Storage
Ni–hydrogen capacity loss on, 541
Structural comparison
of Ni electrodes and precursor phases, 453
Submarines
possible fuel cell applications for, ships and, 181
Sulfur
Na–, battery flight experiment definition study, 555

Technical workshops
at 1989 Space Electrochemical Research and Technology Conference; outlooks and opinions, 591
Technology
Ni electrode, advances in lightweight, 521
PAFC
systems, development and market introduction of, 71
Westinghouse air-cooled, 59
solid polymer electrolyte fuel cell, recent advances in, with low Pt loading electrodes, 367
Temperature
advanced high-, batteries, 565
ambient, secondary Li cells, advances in, 579
Tokyo Electric Power Company
approach to fuel cell power production, 97
Transportation
fuel cells for, 251

Water electrolyzers
for space applications, electrocatalysts for oxygen electrodes in fuel cells and, 413
Westinghouse
air-cooled PAFC technology, 59